State of Washington

Introduction[1]

Washington is one of the Pacific states of the United States of America. It is bounded on the north by the Canadian province of British Columbia, on the east by Idaho, on the south by Oregon, and on the west by the Pacific Ocean.

A series of channels in the northwest – Strait of Juan de Fuca, Haro Strait, and the Strait of Georgia – separate the state from Canada's Vancouver Island. Puget Sound deeply indents the northwestern part of the state. These bodies of water contain numerous islands that form part of the state. The Columbia River forms much of the southern boundary.

Formerly known primarily for its agricultural and forestry products, by the early 1990s Washington had developed a highly diversified economy. Although the state remained a leading national producer of products such as apples, wheat, and timber, manufacturing had become a leading sector of the economy. Tourism and other services also were important; the state's diverse scenic wonders attract hundreds of thousands of visitors annually.

George Washington is the state's namesake; the state's nickname is the Evergreen State.

Population

In 2000, the population of the Washington was 5,894,121, ranking it 15th in the nation. The state's population grew 21 percent from 1990, and is expected to grow another 35 percent by 2020, according to the State Office of Financial Management Forecasting Division.

The 10 largest cities in the state, according to the 2000 Census, are:

1.	Seattle	563,374
2.	Spokane	195,629
3.	Tacoma	193,556
4.	Vancouver	143,560
5.	Bellevue	109,569
6.	Everett	91,488
7.	Federal Way	83,259
8.	Kent	79,524
9.	Yakima	71,845
10.	Bellingham	67,171

Geography

Washington State's 66,582 square miles make it the 20th largest state in the country. The state is roughly half the area of Japan, three quarters the size of Great Britain, and about 40 percent the area of California. It is roughly rectangular, with dimensions of 235 miles from north to south and 345 miles from east to west. Elevations range from sea level to 14,410 feet at the summit of Mount Rainier. Washington's coastline on the Pacific Ocean is 157 miles.

The western section of Washington is part of the Coast Range region. In the southwest, the mountains, known locally as the Willapa Hills, form the lowest segment of the Pacific Coast range; the highest elevation here is about 3,110 feet. By contrast, the Olympic Mountains, which lie north of the Chehalis River valley, have some of the highest elevations in the Pacific mountain system. Mount Olympus, the highest peak, reaches 7,954 feet. With their deep glacial valleys and snowcapped summits, the Olympic Mountains offer some of the most spectacular scenery of the Coast Range.

To the east is the Puget Lowland, a structural depression that extends the length of the state. The maximum elevation is about 500 feet, and the surface is generally flat, although in places marked by hummocky glacial deposits. Puget Sound penetrates more than half of the basin's length.

The rugged, geologically complex Cascade Range lies east of the Puget Lowland. From the vicinity of Mount Rainier southward, the Cascade Range is a volcanic tableland, studded with cones including Mount Adams and Mount St. Helens. The northern section of the range is primarily a granite mass that includes the most extensive valley glaciers in the lower 48 states; the state's two other volcanoes, Mount Baker and Glacier Peak, are found here. The 1980 eruption and subsequent activity of Mount St. Helens demonstrates continued mountain building in the volcanic Cascades.

The Columbia Plateau dominates the southeastern part of the state. Vast lava flows formed this huge basin. The Columbia and Snake rivers have cut deep trenches in the Columbia Plateau. The Palouse Hills in the southeast section of the plateau is one of the state's most important agricultural regions. In the extreme southeast corner are the relatively low-lying Blue Mountains.

Part of the Rocky Mountains crosses the northeastern corner of Washington; several peaks have elevations exceeding 7,000 feet.

Rivers and Lakes

The Columbia River, the largest river in the western United States, drains the eastern half of Washington. The river's numerous drops give it vast hydroelectric power potential. The Columbia's principal tributaries include the Snake, Spokane, Wenatchee, and Yakima rivers. Many smaller rivers flow west from the Cascade Range and the Coast Ranges. The most important of these is the Chehalis River, which rises in the

Cascades and flows west to Grays Harbor, an inlet of the Pacific Ocean. Other rivers include the Cowlitz, Nisqually, and Skagit rivers.

Puget Sound, about one-fifth the size of Lake Erie, is an inlet of the Pacific Ocean; with its numerous arms, it is the state's most significant body of water. Lake Chelan, a long, narrow glacial lake in the Cascade Range, is the largest natural lake in Washington. Dams on the Columbia River have created large artificial lakes. Among these are Franklin D. Roosevelt Lake (behind Grand Coulee Dam) and Banks Lake (behind Dry Falls Dam).

Climate

Washington's climate varies greatly from west to east. A mild, humid climate predominates in the western part of the state, and a cooler dry climate prevails east of the Cascade Range. The average annual temperature ranges from 51° F on the Pacific coast to 40° F in the northeast. The recorded low and high temperatures in the state have ranged from -48° F in 1968 to 118° F in 1961.

A wet, marine West Coast climate predominates in Western Washington; it is mild for its latitude due to the presence of the warm North Pacific Current offshore and the relatively warm maritime air masses. The region has frequent cloud cover, considerable fog, and long-lasting drizzles; summer is the sunniest season.

The western side of the Olympic Peninsula receives as much as 150 inches of precipitation annually, making it the wettest area of the lower 48 states. Weeks may pass without a clear day. Portions of the Puget Sound area, on the leeward side of the Olympic Mountains, are less wet, although still humid.

The western slopes of the Cascade Range receive some of the heaviest annual snowfall in the country, in some places more than 200 inches. In the rain shadow east of the Cascades, the annual precipitation is only six inches. Precipitation increases eastward toward the Rocky Mountains, however.

The climate east of the Cascade Mountains has characteristics of both continental and marine climates. Summers are warmer, winters are colder, and precipitation is less than in western Washington. Extremes in both summer and winter temperatures generally occur when air from the continent influences the inland basin.

Annual precipitation ranges from seven to nine inches near the confluence of the Snake and Columbia Rivers in the Tri-Cities area to 15 to 30 inches along the eastern border. During July and August, four to eight weeks can pass with only a few scattered showers. Thunderstorms and a few damaging hailstorms are reported each summer. During the coldest months, freezing drizzle occasionally occurs, as does a Chinook wind that produces a rapid rise in temperature.

Economy

Before its settlement in the mid-19th century, the region that is now Washington was important for its fur-trapping industry. Agriculture and lumbering gradually developed around Puget Sound and in some outlying areas. A major stimulus to the development of these embryonic economies was the construction of transcontinental and north-south railroads in the late 19th century. By the end of the century, shipping had become important. In the 20th century, the construction of dams on the Columbia River provided irrigation water for the dry farmlands of the east and furnished cheap electric power. Manufacturing began its rapid growth in the state in the World War II period, when the federal government established defense industries here.

The top 10 employment industries in Washington (see Table 1, below) made up 44 percent of state employment in 2001. Half of the top 10 industries have average wages above the state average wage of $37,456. Employment in all industries but transportation equipment manufacturing matched or out-paced the 1991-2001 state average growth rate of 25.2 percent; transportation equipment manufacturing fell nearly 23 percent during this period.

Table 1. Washington Key Employment Industries, 2001

Industry	2001 Employment	2001 Average Wage
Educational services	227,300	$31,455
Food services and drinking places*	176,100	$12,841
Professional and technical services	138,700	$53,533
Administrative and support services	108,900	$26,069
Transportation equipment manufacturing	106,000	$61,687
Ambulatory health care services	101,100	$34,627
Specialty trade contractors	89,300	$36,810
Hospitals	87,700	$40,797
Executive, legislative and general government	81,100	$40,259
Merchant wholesalers, durable goods	65,400	$50,025

* - Unusually low wage mostly caused by prominence of part-time workers.

Source: *Washington Key Employment Industries*, Washington Department of Employment Security, 2001

International Trade[2, 3]

In 2000, more than $107 billion in international trade moved through Washington. More than half of the goods (nearly $57 billion) moved through the state's water ports, with

the Ports of Seattle ($32 billion) and Tacoma (nearly $20 billion) handling the bulk of the waterborne freight.

In 2001, Washington's exports were valued at $35 billion, fifth among all states. Leading export industries were transportation equipment, primarily aircraft and parts, agricultural crops, electronic and scientific equipment, wood products, special industry machinery, medical equipment, telecommunications, environmental, and pharmaceuticals. The largest imports included passenger cars and trucks, auto parts, aircraft engines and equipment, communications equipment, electrical energy and petroleum gases.

The state's major trading partners in 2001 were Japan, Singapore, China, United Kingdom, Canada, South Korea, Germany, Taiwan, France, and Saudi Arabia.

Agriculture

Farming accounts for nearly 3 percent of the annual gross state product in Washington. The state has about 37,000 farms, which average 432 acres. Agriculture is concentrated in the Puget Sound area and the somewhat-isolated valleys to the south, in the dry-farmed holdings of the eastern two-thirds of the state, and in the irrigated land on the upper Columbia, Snake, and lesser rivers. Crops make up nearly two-thirds of the yearly farm income. Wheat, grown primarily in the east, is the state's leading field crop. Fruits, nuts, and berries account for more than one-third of the value of the crops produced in the state. Washington is the leading national producer of apples, and is known for its cherries, plums, grapes, pears, and blueberries. Other important crops are hay, hops, potatoes, sugar beets, peas, dry beans, and flower bulbs.

Livestock products account for more than one-third of annual agricultural income. Dairy farming is concentrated in the Puget Sound region and in valleys of the southwest. Cattle and sheep are raised in the drier eastern part of the state.

Forestry

Forestry is a major industry in Washington. About 93 percent of harvested wood is softwood, primarily Douglas fir and western hemlock. Nearly all of the harvest is in the moist valleys of the Cascade Range and to the west. More than 40 percent is used for lumber, about 40 percent is exported as round wood, and the remainder is used for pulp and plywood.

Fishing

The fishing industry is significant, although it accounts for less than 1 percent of the annual gross state product. Ports on Puget Sound and the Pacific Ocean handle almost all landings; less than 1 percent comes from fresh water. In value, salmon accounts for about one-third of the catch, followed by oysters, crab, shrimp, and other shellfish. Other fish caught include halibut, flounder, tuna, cod, rockfish, pollock, and sablefish.

Mining

Metallic mineral resources are found primarily in the mountains in the northeastern part of the state. Lead, zinc, magnesium, and gold are present here. Coal deposits are found in the western Cascades; sand and gravel are found in many areas. The mining industry accounts for less than 1 percent of the annual gross state product in Washington. Leading mineral products include coal, Portland cement, sand and gravel, and stone. Other minerals produced include diatomite, crude gypsum, lime, magnesium, olivine, and silver.

Manufacturing

Manufacturing accounts for 17 percent of the annual gross state product in Washington and employs more than 360,000 workers. The leading manufactured products include transportation equipment, primarily aircraft and aerospace equipment; lumber and wood products; paper; food products; industrial machinery; primary metals; printed materials; and precision instruments. Most industry is concentrated in the urbanized corridor along Puget Sound between Bellingham in the north and Olympia in the south. Seattle and Tacoma are the primary industrial centers of the state. The processing of commodities from forestry, farming, and fishing tends to be located near the sources of raw materials.

Tourism

Each year several million visitors contribute some $4.8 billion to the Washington economy. The state's major attractions are rural and scenic, including three national parks – Mount Rainier, Olympic, and North Cascades – three national recreation areas – Lake Chelan, Coulee Dam/Lake Roosevelt, and Ross Lake – and extensive areas of national forests. In addition, the state maintains a system of 110 parks developed for recreational use. Seattle is the leading urban tourist attraction; its Space Needle and monorail, built for the Century 21 Exposition, the world's fair of 1962, are still in use.

Transportation

Washington has a network of about 81,300 miles of federal, state, and local roads. This figure includes 757 miles of interstate highways that cross the state from north to south and from east to west. The road system is densest in the heavily populated Puget Sound region. Washington also is served by 3,470 miles of Class I railroad track

Seattle, Tacoma, Kalama, and Longview are the most important of Washington's ports. Although most ports are located on Puget Sound or the Pacific coast, several are located on the upper Columbia River; oceangoing and river barges can navigate upstream by a 24-foot deep channel as far as the Tri-Cities (Kennewick, Pasco, and Richland). Ferries connect key points on Puget Sound with one another and with Victoria, British Columbia. A crude-oil pipeline reaches Puget Sound from Alberta; natural-gas pipelines extend from British Columbia to Spokane and from Alberta through Spokane to Oregon and California.

Washington has 302 airports, 93 heliports, and 13 seaplane bases. The Seattle-Tacoma and Spokane international airports dominate air traffic in the state. The former is also an important terminus for transpacific flights.

Energy

Electricity generating plants in Washington have a total installed capacity of 24.2 million kilowatts and produce about 100.5 billion kilowatt-hours of electricity each year. Washington leads the nation in both installed capacity and annual production of hydroelectricity. The Grand Coulee, Chief Joseph, and John Day dams are the key units in a system that includes six major dams on the Columbia River, four on the Snake River, and others on lesser rivers.

Hydroelectric facilities produce about three-quarters of the annual output of electricity, with conventional thermal installations and one nuclear power station producing the rest. The state exports some electricity during various times of the year.

Government[4, 5]

Washington is governed under a Constitution adopted in 1889, and amended since then. The Constitution prevents a strong centralized state government. Local governments were structured to provide basic services within counties and incorporated cities and towns, with special purpose districts allowed to provide services outside of cities and towns when the county was unable to do so.

The home-rule philosophy of government in Washington focuses on people maintaining control of government services and actions at the lowest local level. This fosters a multitude of government organizations and results in more collegial intergovernmental interactions rather than the state directing or managing governmental activities.

Washington has 39 counties, most of which are governed by popularly elected three-member Boards of Commissioners. Other elected county officials included the Assessor, Auditor, Treasurer, Coroner, Clerk, Sheriff, and Prosecuting Attorney. Larger counties, including King, Pierce, and Snohomish Counties, have an elected County Executive and a larger elected County Council. Most of the state's 268 towns and cities have a mayor-council form of government. Some cities have a city manager-council form of government, with an elected council that hires a city manager or administrator to run day-to-day operations.

The state has a bicameral Legislature, with popularly elected Senate and House of Representatives. The 49 members of the Senate serve four-year terms, and the 98 members of the House of Representatives serve two-year terms. Two Representatives and one Senator represent each of the state’s 49 legislative districts.

Washington's Supreme Court has a chief justice and eight associate justices. The intermediate appellate court is the 17-member Court of Appeals, and the major trial

courts are the Superior Courts of the counties, which have 147 judges. The judges of all these courts are popularly elected on nonpartisan ballots.

Natural Hazards[6]

Washington faces nine natural hazards that are addressed in the Washington State Hazard Mitigation Plan:

Avalanche – Avalanches have killed more than 190 people in the past century, exceeding deaths from any other natural cause. Avalanches kill one to two people, on average, every year in the state. Most current avalanche victims are participating in recreational activities in the mountain backcountry where there is no avalanche control.

Drought – In the past century, Washington State has experienced a number of drought episodes, including several that lasted for more than a single season. The recent 2001 drought was the second worst on record. Drought can have a widespread impact on the environment and the economy, depending on its severity, although it typically does not result in loss of life or property damage. Drought threatens the supply of electricity in Washington; hydroelectric power plants generate nearly three-quarters of the electricity produced in the state.

Earthquake – More than 1,000 earthquakes occur in Washington each year. A dozen or more are felt; occasionally, they cause damage. Large earthquakes in 1946 (magnitude 5.8), 1949 (magnitude 7.1) and 1965 (magnitude 6.5) killed 15 people and caused millions in damage. The most recent large event, the magnitude 6.8 Nisqually earthquake on February 28, 2001, killed one person, injured more than 700, and caused from $1 billion to $4 billion in damage. The earthquake threat in Washington is not uniform. Most earthquakes occur in Western Washington; some damaging events, such as the 1872 magnitude 6.8 quake, occur east of the Cascades. Geologic evidence documents prehistoric magnitude 8 to 9 earthquakes along the outer coast, and events of magnitude 7 or greater along shallow crustal faults in the urban areas of Puget Sound.

Flood – Damage from flooding exceeds damage by all other natural hazards in Washington State. Many rivers typically flood every two to five years; damaging flood events occur less frequently. In western Washington, long periods of rainfall and mild temperatures normally cause flooding. Flooding in eastern Washington usually results from periods of heavy rainfall on wet or frozen ground, mild temperatures, and from the spring runoff of mountain snow pack; this side of the state also is prone to flash flooding. Floodplains make up about 2.5 percent of the state's total land area; these areas contain an estimated 100,000 households.

Landslide – Landslide is the movement of rock, soil and debris down a hillside or slope. Landslides take lives, destroy homes, businesses, and public buildings, interrupt transportation, undermine bridges, derail train cars, cover clam and oyster beds, and damage utilities. Areas historically subject to landslides include the Columbia River Gorge, the banks of Lake Roosevelt, the Interstate 5 corridor, U.S. 101 Highway

corridor along the Pacific Coast and from the coast to Olympia, the Cascade and Olympic mountain ranges, and Puget Sound coastal bluffs.

Severe storm – All areas of Washington State are vulnerable to severe weather. A severe storm is an atmospheric disturbance that results in one or more of the following phenomena: strong winds, large hail, thunderstorm, tornado, rain, snow, or freezing rain. Typically, major impacts from a severe storm are to transportation and loss of utilities. Most storms move into Washington from the Pacific Ocean.

Tsunami – The Pacific Coast, Strait of Juan de Fuca, Puget Sound, and large lakes are at risk from tsunamis, trains of powerful waves that threaten people and property along shorelines. Large earthquakes, landslides and underwater volcanic eruptions generate tsunamis. A Pacific Ocean tsunami can affect the entire Pacific basin, while a tsunami in inland waters can affect many miles of shoreline. Tsunamis typically cause the most severe damage and casualties near their source. Nearby populations often have little time to react; persons caught in the path of a tsunami often have little chance of survival.

Volcano – Washington has five major volcanoes – Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens and Mount Adams. The risk posed by volcanic activity is not always apparent, as volcanoes can lie dormant for centuries between eruptions. When volcanoes erupt, pyroclastic flows, lava flows, and landslides can devastate areas 10 or more miles away, while lahars can inundate valleys more than 50 miles downstream. Falling ash can disrupt human activities hundreds of miles downwind. Washington's volcanoes will erupt again, but none show signs of imminent activity; they are among the most dangerous in the United States because people are moving into valleys below these mountains at a rapid pace. Mount St. Helens' 1980 eruption was the most destructive in the history of the United States.

Wildland Fire – Short-term loss caused by wildland fire can include the destruction of timber, wildlife habitat, scenic vistas, and watersheds, and increase vulnerability to flooding. Long-term effects include smaller timber harvests, reduced access to affected recreational areas, and destruction of cultural and economic resources and community infrastructure. The wildland fire season usually begins in early July and typically culminates in late September with rain; wildland fires have occurred in every month of the year. People start most wildland fires, but lightning-caused fires burn more state-protected acreage, an average of 10,866 acres annually; human caused fires burn an average of 4,404 state-protected acres each year.

Regions

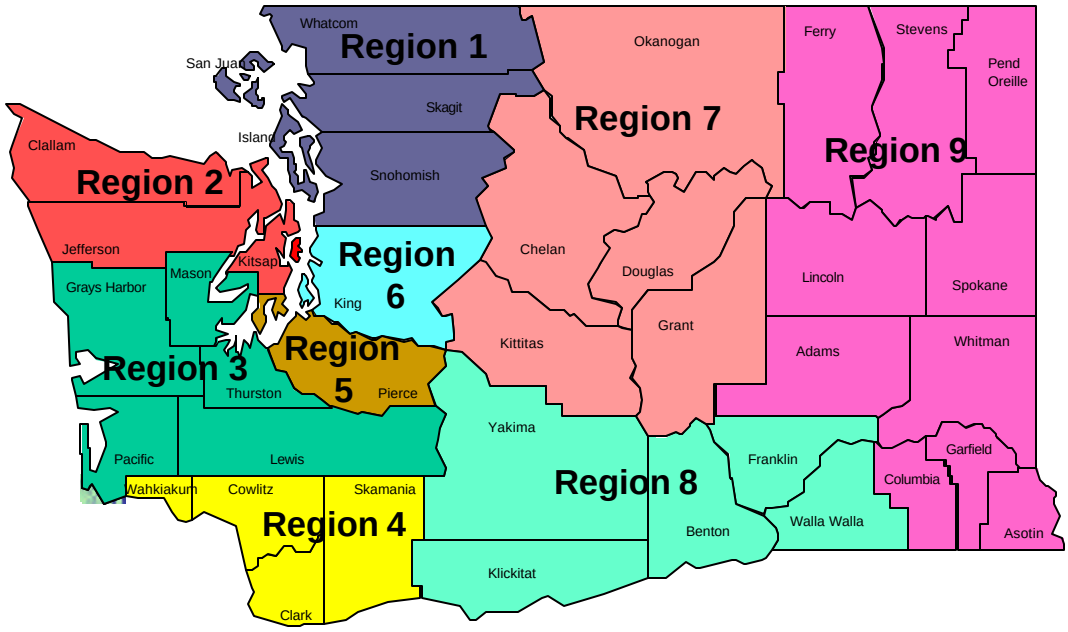
The Washington State Hazard Mitigation Plan uses a regional approach to provide a better understanding of the threat posed by natural hazards to state facilities and to vulnerable populations. This approach divides the state into nine regions, found in Table 2 and the map below. The Washington Department of Health originally developed the nine-region format for bio-terror planning, and the Washington Military

Department's Emergency Management Division adopted it for homeland security planning.

Table 2. State Hazard Mitigation Planning Regions

Region 1	Region 2	Region 3	Region 4
Island	Clallam	Grays Harbor	Clark
San Juan	Jefferson	Lewis	Cowlitz
Skagit	Kitsap	Mason	Skamania
Snohomish		Pacific	Wahkiakum
Whatcom		Thurston	
Region 5	**Region 7**	**Region 8**	**Region 9**
Pierce	Chelan	Benton	Adams
	Douglas	Franklin	Asotin
Region 6	Grant	Klickitat	Columbia
King	Kittitas	Walla Walla	Ferry
	Okanogan	Yakima	Garfield
			Lincoln
			Pend Oreille
			Spokane
			Stevens
			Whitman

Planning Regions



---

[1] *General Information About Washington State*, Access Washington, State of Washington Internet Portal, Washington State Department of Information Services, 2003, <http://access.wa.gov/government/awgeneral.asp#geo>, (March 31, 2003).

[2] *Washington State Data Book 2001*, Office of Financial Management.

[3] *International Trade – Convenient Access to Global Markets*, Office of Trade and Economic Development, <http://www.oted.wa.gov/trade/pdf/tradeprofile.pdf>, (October 14, 2003).

[4] *Our Evergreen State Government, State and Local Government in Washington*, Richard Yates, 1989.

[5] *Washington – A History of the Evergreen State*, Mary W. Avery, 1965.

[6] Information on hazards is from Hazard Profiles, which appear later in this plan.